

ADDITIONAL INFORMATION REQUIRED FOR

THE

ANACONDA COPPER COMPANY'S

JACKPILE-PAGUATE

RECLAMATION PLAN

October 27, 1980

Re: Letter - R. D. Lynn, Anaconda Copper Co.,
October 28, 1980

Re: Ltr.: Lynn, Anaconda
10-28-80

1. To adequately assess the final reclaimed land forms, additional detail must be provided. Please submit the cross-sections shown in red on the attached map.
2. In order to evaluate the post reclamation land forms, a contour map of the final topography is necessary. Please provide a topographic map (20 foot contour interval) showing the impacted area as it would appear after reclamation is completed.
3. Please provide a detailed discussion and maps that show the post reclamation drainage patterns in the pits.
4. To the present time, no waste pile slope has retained topsoil for more than two years despite intensive efforts to revegetate. Both sheet wash and rill erosion have eroded the slopes from top to bottom. Although the overall slope on many of the dumps will be reduced by benching, the dumps will still contain material at a slope of 1-1. Please provide substantiation that the slopes indicated for the dumps, backfill, and buttresses will be stable against sheet wash and rill erosion; and provide the slope stability study mentioned on page 24.
5. The plan states that some of the waste pile slopes would be benched at 45-foot intervals, some at 70-foot intervals, and one as high as 180 feet would not be benched at all. Please provide the specific criteria used to justify these differences.
6. The proposed final grade on the waste pile slopes varies from 2:1 to 4:1, even though all dumps contain essentially the same material. Please provide the specific criteria used to justify this difference.
7. Page 28 states that different slope stability situations were analyzed for stability and the results were used to determine the slope angle considered safe. The adequacy of these slope angles cannot be assessed with the information contained in the plan. Please submit a copy of the consulting rock mechanic's report.
8. The plan states that each terrace has been designed with erosion control features, berms, and drainages. Please provide a detailed description of these features, including their design criteria, locations, heights, etc.
9. Page 32 states that topographic maps made in 1938, 1949, and 1980 show that the majority of the siltation of Mesita Reservoir occurred prior to mining activities. Please provide a copy of those maps, and a discussion of their interpretation.

10. Pages 33 and 34 state that there will be two topsoil borrow areas as depicted on Plate 4.1-2. Please provide a detailed description of these areas and the impacts of topsoil removal (e.g., thickness of topsoil to be removed, resulting landforms, specific reclamation procedures for borrow areas, etc.).
11. Page 26 states that livestock access will be provided to each of the open pits. Please provide a map showing the types and locations of the access to be provided.
12. Many of the waste pile slopes are not scheduled for modification, even though their slopes are identical to some piles that are scheduled for modification. The South Dump is a typical example. Please provide the specific criteria used to justify these differences.
13. Please provide the details on the amount, location, and chemical content of the waste that has already been used for backfilling.
14. Cross-sections A-A', B-B', and C-C' show that the toe of South Dump will lie on level ground after reclamation is completed. Since the toe presently lies on the slope of Oak Canyon, it must be cut back from the canyon wall in order to terminate on level ground. Please discuss the distance that the dump will be cut back from the canyon wall, and the erosion control features that will be constructed between the toe and the canyon wall.
15. Section 6.2.2 (pages 35-36) states that "The ventholes will be filled with overburden material, bulkheaded, and plugged with concrete. The areas around the ventholes will be contoured and reseeded." Please provide a detailed description of the filling, bulkheading, plugging, contouring, and seeding procedures to be used (e.g., present condition of venthole's casing, etc.; composition of fill material and allowances for settling; details of bulkhead construction; details of the concrete plug's thickness, location within hole column). Also, Plate 4.1-4 needs to be revised to show the locations of the ventholes for the proposed P-13 and NJ-45 Mines.
16. Section 6.2-3 (page 36) discusses the closing of adits and declines. Please provide a detailed description of the procedures to be used, including the present condition of mine entries (size, existing support, etc.); composition of fill material and allowances for settling; construction of seals or bulkheads in entries, etc. Entries presenting specific problems, such as the Woodrow Shaft, should be discussed individually. Also, the entries for the proposed P-13 and NJ-45 Mines must be included in the discussion.

17. Please provide the details on the plugging of exploration holes and drill site cleanup (e.g., locations, sloping of cuts, replacement of displaced rock, borehole plugging procedures, sealing mixtures and procedures).
18. Please provide the underground subsidence study mentioned on Page 24, and a discussion of the type and location of the ground support measures to be implemented.
19. Please alter the appropriate maps to show the locations of abandoned mines H-1 and P-9-2.
20. One reclamation alternative that the Geological Survey will consider is the placing of all waste material that contains more than .02 percent U_3O_8 into one location for possible future recovery, or heap leaching, and for environmental protection. Please provide a discussion of any preferred location that would optimize recovery, yet be environmentally safe should this material not become economical to recover or heap leach in the future.
21. Please submit a detailed list of the U_3O_8 content of all waste piles and protore piles. This information should be submitted under separate cover, since it must be held confidential.
22. Please provide a discussion and maps of all remaining unmined reserves (location, grade, and economic potential). This information should be submitted under separate cover, since it must be held confidential.
23. The plan states that the amount of backfill to be placed in the open pits will be determined "by the extent of radiological mineralization on the pit floor and up the pit walls, and the projected groundwater level" (6.1.2.1, page 26); however, the plan does not specify the groundwater recovery level or recovery period. The plan also states that "there may be very limited recovery of groundwater into backfilled pits" (6.1.9, page 33); but there is no discussion of what impacts such recovery may have on the backfill. Furthermore, the plan does not show the potentiometric surface of the groundwater in the Jackpile Sandstone throughout the entire area disturbed by mining operations (Plate 4.2.2). In order to assess and resolve these concerns, as well as provide other necessary hydrologic information for the area to be affected by reclamation, we request that the hydrology study conducted for Anaconda be submitted.
24. Please provide a discussion of the method and depth of cover to be placed over the in situ Jackpile Sandstone that remains in the pit walls.

25. Please provide a discussion of the stream channel stabilization measures that would be implemented to prevent the Rio Paguata and Rio Moquino from eroding into the waste piles.
26. Page 32 states that a radiological report is being prepared on the sediment in Mesita Reservoir. Please provide this report when it is completed.
27. The plan states on Page 32, that the dumps will be cut back approximately 200 feet from the stream centerline, but cross-sections M-M', P-P', D-D', and E-E' show that these dumps will be cut back only 125 to 140 feet. Please provide a justification for this discrepancy.
28. In previous discussions on reclamation of the site, Anaconda had stated that the Rio Paguata would be returned to its original route. Please provide a detailed discussion of the location and procedure for returning the Rio Paguata to its original route, or a justification for not performing this work.
29. Please provide a discussion of the criteria used to determine that cutting the waste pile back 200 feet from the stream center line is sufficient to assure that they would not be eroded by the streams. Has Anaconda performed a flood analysis of the Rio Paguata and Rio Moquino to determine the effects of flooding on the dumps?
30. Has Anaconda considered mixing shale with the ore associated waste that will be used for backfill in the pits in order to create a reducing environment, and aid in the precipitation of the uranium from the groundwater?
31. The minimum amount of backfilling that will be performed in the pits needs to be clarified. To what height above the aquifer recharge level will backfilling be performed? Will backfilling be above the original (pre-mining) level of the Jackpile Sandstone? Please provide a discussion of the above.
32. The plan states that waste dumps will be covered with four (4) feet of "non-hazardous" material, and two (2) feet of "fill material" to mitigate the potential radiological hazards. Please discuss the specific standard that is being used as radiologically safe, and the criteria used to show that six (6) feet of top-dressing will be sufficient to meet this standard.
33. Please discuss the expected post-reclamation radon concentrations in the immediate vicinity of the mine.

34. Page 37 states that "reclamation specifically excludes any guarantee of habitability of the reclaimed and stabilized hazardous materials". Please provide a detailed discussion of the areas you wish included under this statement, and the justification for labeling the areas as uninhabitable. Page 7 states that the elimination of health and safety hazards is the prime objective of the reclamation plan. Evidently this objective can only be partially achieved. Please discuss additional measures that could be implemented to fully achieve this objective.

35. Table 6.1-1 lists the top-dressing for various reclaimed dumps. Were these dumps covered with four (4) feet of cover in addition to the top-dressing listed on the table? If not, please explain why these dumps do not require this extra cover, while the dumps to be reclaimed do.

36. What degree of compaction will be performed on the four feet of cover?

37. Open pit cross-sections show proposed backfill will receive cover, while existing backfill will receive only topsoil (e.g., Plate 6.1-2C). Please provide the criteria used to determine the selective placement of cover.

38. Please provide a justification for placing two (2) feet of topsoil on the dumps, but only one (1) foot of topsoil on the pit backfill.

39. Please provide a detailed map showing the location of the undisturbed rangeland comparison plot that is referred to on Pages 8 and 20. Please present a detailed analysis of species abundance, diversity, and chemical content of the species on these plots.

40. Please discuss the method of mycorrhizal inoculation that is being used. Is the mycorrhizal consistent with the geographical area and revegetation species?

41. Page 33 states that "seed mixtures will vary with site conditions". Please define the seed mixtures and site conditions to be considered and the criteria used to determine the seed mixtures for a particular site.

42. To what specific parameters (species abundance and diversity, rangeland condition, or grazing capacity) will the site be revegetated?

43. Due to seed dormancy and climatic variability, revegetation success can normally not be assessed for five to six years after planting. Please present a justification for considering revegetation successful after only three years.
44. Please summarize the test results on the revegetation species ability to concentrate hazardous elements.
45. Have the revegetation species been tested for reproductive capabilities? If not, when is this test to be completed?
46. Do the seeding rates shown on Table 6.1-5 represent pure live seed?
47. Please provide a detailed discussion of the procedures and success of the revegetation that has been performed to the present time. Include a discussion of the locations, species composition and diversity, seeding mixtures, etc.
48. To what extent will Anaconda use containerized material during revegetation efforts?
49. Please provide a discussion of the seeding rates and seeding dates that are anticipated.
50. Page 30 states that the permanent structures will be radiologically cleaned up. What specific standard will be used to assess the cleanup?
51. Page 30 states that roads, parking lots, etc., will be cleared of radiological contaminants. What specific standard will be used to assess the cleanup?
52. Page 27 states that all hazardous material will be removed for Dump J area. What specific standard will be used to assess the cleanup?
53. Please provide a discussion and maps of the location, amount, and chemical composition of the backfill that has already been placed in the open pits.
54. The reclamation report submitted to this office on January 31, 1980, showed three large ore stockpiles (17-E, SP-1, and J-1-A) adjacent to the Jackpile pit; but these stockpiles are not shown in the reclamation plan. Please explain this discrepancy.
55. Will Anaconda adhere to the State of New Mexico's compaction requirements for a roadbed for Highway 279?

56. Will Anaconda give hiring preferences to the Laguna people throughout the reclamation process?
57. Please provide a summary and analysis of the data obtained from the various environmental monitoring systems at the mine (e.g., radon and particulate air sampling, surface and subsurface water sampling, gamma and radon flux for each waste pile and soil analysis).
58. Please provide an estimate of the costs of reclamation. This information may be held confidential if you so desire, and if it is submitted under separate cover.
59. Please provide the definition which you use for the following terms: ore, protore, ore associated waste, waste, cover, non-hazardous material, and fill.
60. Please submit a general time-table for reclamation.
61. Has Anaconda assessed the mine's radiological impacts on the Village of Paguate? If so, what levels were observed? Does Anaconda plan to take any measures to mitigate this impact?
62. Please provide a discussion and data on the radiological content of the rail-spur ballast material, and on the soils adjacent to the spur.
63. Ponding of surface waters occurs behind the blocked drainages after rainfall and snowmelt. Has Anaconda assessed the likelihood of this water becoming radiologically contaminated by its contact with the waste material in the blockages? Has Anaconda considered the benefits of building small dams upstream from the blockages to catch this water before it comes in contact with the blockages?
64. Please submit a detailed description of the type of fencing that is proposed for the highwalls, and the rationale behind the decision to fence only a portion of the highwall.
65. Please discuss the disposition of all sewage lagoons.
66. Open pit cross-sections seem to differentiate between "excavation limit" and "natural ground", but the two designations overlap on several cross-sections. Please clarify these designations.
67. Please correct Table 6.1-1 to include the amount and type of cover for Dumps O and P.

68. Plate 4.1-2 shows that a portion of ore pile J-2 will be milled, and a portion will be used for backfill. Please provide a justification for this split disposition.
69. Plate 4.1-2 shows that only a portion of ore pile 10 will be milled. Please provide a justification for the split disposition, and a discussion of the disposition of the remaining portion.
70. The overall slope on Plate 6.1-9I is marked incorrectly.
71. The location of Dump M is not shown on any of the maps. Where is Dump M, and what is its proposed disposition?
72. Please discuss the content and disposition of the red portions of the SP-1 ore stockpile and the R Dump on Plate 4.1-2.
73. Why is ore stockpile SP-2 now shown as a waste dump on Plate 4.1-2?
74. Plate 4.1-2 shows that stockpile SP-1 will be milled, but cross-section D-D' shows that it will remain in place, with modification. Which figure is correct?
75. Please provide the legend for the cross-hatching and shading shown on Plates 6.1-1 and 6.1-3.
76. Plate 5.2-1 shows several control grids. Are these the gamma survey control stations discussed in 5.2(e) on Page 23?
77. Plate 4.1-3 and 4 show numerous shaft symbols on Black Mesa above the P-10 Mine. These symbols obviously do not represent ventilation shafts. What do they represent?
78. Please provide a description of the location and purpose of the Quirk loading dock.
79. Please provide the details of capping the water wells discussed on Page 31.

PAGUATE VILLAGE

NORTH PAGUATE PIT

SOUTH PAGUATE PIT

SOUTH DUMP

JACKPILE PIT



ADDITIONAL CROSS SECTIONS REQUIRED

THE ANACONDA
NEW MEXICO CO.

JACKPILE-PAGUATE
DUMP CROSS
LOCATION
- LEGEND

Dump

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